UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
FINDLEY, CHRISTOPHER G

ART UNIT	PAPER NUMBER
2482	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
Office Action Summary	10/589,640	YIN ET AL.
	Examiner	Art Unit	
	CHRISTOPHER FINDLEY	2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2011*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *33-60* is/are pending in the application.
    5a) Of the above claim(s) _____ is/are withdrawn from consideration.
6)☐ Claim(s) _____ is/are allowed.
7)☒ Claim(s) *33-60* is/are rejected.
8)☐ Claim(s) _____ is/are objected to.
9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.
11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 6/09/2011 have been fully considered but they are not persuasive.

Re claims 33, 54, and 55, the Applicant contends that the prior art cited fails to teach or suggest

weighting the at least one macroblock in accordance with a weighting used during weighted prediction

decoding of a macroblock in the stream using at least one reference picture to yield a weighted prediction

for concealing the at least one macroblock-found to have pixel errors. However, the Examiner

respectfully disagrees. As previously noted, column 8, lines 36-39, of Raman establish that an error

recovery module detects a channel error by locating damaged macroblocks, while column 8, lines 48-58,

of Raman disclose the performance of weighted interpolation on the damaged macroblock identified.

Raman also discloses that in some embodiments a damaged macroblock is estimated by using a

weighted linear interpolation of the undamaged macroblocks surrounding the damaged macroblock

(Raman: column 4, lines 23-26). Raman discloses in Fig. 2 that a computed sum value may be compared

to a threshold, wherein if the computed sum value is greater than the threshold value, then an associated

undamaged macroblock in a previous video frame is copied to conceal the error (Raman: column 5, lines

5-11). Furthermore, Raman discloses that the operations described by Figs. 2 and 4 may be

implemented serially or in parallel, thus indicating it is possible to incorporate elements from one

embodiment into another in a parallel architecture (Raman: column 6, lines 33-44).

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for

the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

3.   Claims 33-39, 43-47, 50-51, 53-57, and 59-60 are rejected under 35 U.S.C. 102(e) as being anticipated by Raman et al. (US 7606313 B2, hereinafter referred to as "Raman").

Re **claim 33**, Raman discloses a method of concealing spatial errors during decoding of an image comprised of a stream of macroblocks coded using weighted prediction, comprising the steps of: examining at least one macroblock for pixel data errors (Raman: column 8, lines 36-39), and if any such errors exist, then: weighting the at least one macroblock in accordance with a weighting used during weighted prediction decoding of a macroblock in the stream using at least one reference picture to yield a weighted prediction for concealing the at least one macroblock found to have pixel errors (Raman: column 8, lines 36-39, an error recovery module detects a channel error by locating damaged macroblocks; column 8, lines 48-58, weighted interpolation on the damaged macroblock; Fig. 2 and column 5, lines 5-11, a computed sum value may be compared to a threshold, wherein if the computed sum value is greater than the threshold value, then an associated undamaged macroblock in a previous video frame is copied to conceal the error; column 6, lines 33-44, the operations described by Figs. 2 and 4 may be implemented serially or in parallel, thus indicating it is possible to incorporate elements from one embodiment into another in a parallel architecture).

Re **claim 34**, Raman discloses selecting an implicit weighted prediction decoding mode; and weighting at least one macroblock using implicit mode weighted prediction (Raman: column 8, lines 54-58).

Re **claim 35**, Raman discloses selecting an explicit weighted prediction decoding mode; and weighting at least one macroblock using explicit mode weighted prediction (Raman: column 8, lines 48-53).

Re **claim 36**, Raman discloses using the implicit mode for temporal concealment with use of bi-predictive compensation (Raman: column 3, lines 24-53, MPEG inter-coding inherently includes B frames).

Re **claim 37**, Raman discloses weighting at least one macroblock using bi-predictive compensation in accordance with a type a type of reference picture (Raman: column 4, lines 34-50).

Re **claim 38**, Raman discloses weighting at least one macroblock to limit error propagation when at least a portion of at least one reference picture was previously concealed (Raman: column 8, lines 54-58).

Re **claim 39**, Raman discloses weighting at least one macroblock to limit error propagation when at least a portion of the at least one reference picture was iteratively concealed (Raman: column 8, lines 48-53).

Re **claim 43**, Raman discloses weighting the at least one macroblock using one of an implicit and explicit mode in accordance with prescribed criterion (Raman: column 8, lines 48-58).

Re **claim 44**, Raman discloses weighting the at least one macroblock using one of an implicit and explicit mode in accordance with criterion associated with one of a spatial and temporal neighboring macroblock, respectively (Raman: column 8, lines 48-58).

Re **claim 45**, Raman discloses weighting the at least one macroblock using one of an implicit and explicit mode in accordance with criterion associated with one of a spatial and temporal neighboring macroblock, respectively, that are correctly received (Raman: column 8, lines 48-58).

Re **claim 46**, Raman discloses weighting at the least one macroblock using one of an implicit and explicit mode in accordance with criterion associated the reference picture type (Raman: column 8, lines 48-58).

Re **claim 47**, Raman discloses weighting value for weighting the at least one macroblock from a temporal neighboring macroblock (Raman: column 8, lines 48-58).

Re **claim 50**, Raman discloses estimating a weighting value for weighting the at least one macroblock from at least one spatial neighboring macroblock (Raman: column 8, lines 48-58).

Re **claim 51**, Raman discloses estimating weighting value for weighting the at least one different

macroblock from at least one of a spatial and temporal neighboring macroblock in accordance with

prescribed criterion (Raman: column 8, lines 48-58).

Re **claim 53**, Raman discloses the presence of several storage devices for use in processing the

data (Raman: Fig. 6, elements 606, 608, 612, and 614).

Re **claim 54**, arguments analogous to those presented for claim 33 are applicable to claim 54.

Therefore, claim 54 has been analyzed and rejected with respect to claim 33 above.

Claim 55 recites the corresponding decoder for implementing the method of claim 54. Therefore,

claim 55 has been analyzed and rejected with respect to claim 54 above.

Re **claim 56**, Raman discloses that the detector comprises a variable length decoder block

(Raman: Fig. 5, variable length decoding module 525).

Re **claim 57**, Raman discloses that the error concealment parameter generator generates values

for weighting the at least one macroblock to limit error propagation when at least a portion of the

reference picture was previously concealed (Raman: column 8, lines 48-58).

Claim 59 has been analyzed and rejected with respect to claim 43 above.

Re **claim 60**, Raman discloses that the error concealment parameter generator generates values

for weighting the at least one macroblock in accordance with criterion associated with one of a spatial and

temporal neighboring macroblock (Raman: column 8, lines 48-58).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 40-42, 48-49, 52, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raman et al. (US 7606313 B2) in view of Koto et al. (US 20030215014 A1).

Re **claim 40**, Raman does not specifically disclose weighting each of at least two different macroblocks from different reference pictures to yield a weighted prediction for concealing a macroblock found to have pixel errors. However, Koto discloses a video encoding and decoding system, wherein weighting factors are applied to images stored in frame memories (Koto: Fig. 19, elements 117, 118, 152, and 151). Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Re **claim 41**, Raman does not specifically disclose weighting the at least one macroblock of a current picture and a neighboring picture. However, Koto discloses a video encoding and decoding system, wherein weighting factors are applied to images stored in frame memories (Koto: Fig. 19, elements 117, 118, 152, and 151). Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Re **claim 42**, Raman does not specifically disclose weighting the at least one macroblock when one of a fading or dissolve is detected. However, Koto discloses that it is an object of the present invention to suppress increases in computation amount and the overhead for predictive picture encoded data, while greatly improving prediction efficiency, in video encoding and decoding, particularly for fading pictures (Koto: paragraph [0010]). Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Re **claim 48**, Raman does not specifically disclose estimating the weighting value from the temporal neighboring macroblock by curve fitting to find an average intensity value from which such estimated weighting value is derived. However, Koto discloses a video encoding and decoding system, wherein a combination of "average" and "linear extrapolation" coefficients are used (Koto: paragraph [0081]). Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Re **claim 49**, Raman does not specifically disclose estimating the weighting value from a temporal neighboring macroblock based on a linear fading/dissolve in the reference picture. However, Koto discloses a video encoding and decoding system, wherein if the fade detector 140 determines that the picture represented by the input video signal 100 is a fading picture, the predictive macroblock selector 120 limits a prediction mode to a prediction from one reference frame or a prediction based on linear extrapolation or linear interpolation of a plurality of reference frames (Koto: paragraph [0066]). Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Re **claim 52**, Raman does not specifically disclose thatthe prescribed criterion includes assigning the at least one spatial neighboring macroblock a higher priority. However, Koto discloses that the references are weighted (Koto: Fig. 19), which inherently prioritizes some references by assigning higher values for the weighting coefficient. Since both Raman and Koto relate to error resiliency, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the multiple reference capabilities of Koto with the system of Raman in order to improve accuracy by considering a more complete set of reference data.

Claim 58 has been analyzed and rejected with respect to claim 42 above.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday (8:30 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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